



SEQUENCE LISTING

<110> Qi, Yan
Zhang, Xianghua
Konigsberg, Paula

<120> Gene Therapy Vectors Having Reduced Immunogenicity

<130> A-72186-1/TAL/DCF (471702-00008)

<140> US 10/804,763

<141> 2004-03-19

<150> US 60/456,378

<151> 2003-03-19

<160> 51

<170> PatentIn version 3.2

<210> 1

<211> 235

<212> PRT

<213> Homo sapiens

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Trp Asn Leu Gly Glu Thr Val Glu Leu Lys Cys Gln Val Leu Leu Ser
35 40 45

Asn Pro Thr Ser Gly Cys Ser Trp Leu Phe Gln Pro Arg Gly Ala Ala
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Ala Ser Pro Thr Phe Leu Leu Tyr Leu Ser Gln Asn Lys Pro Lys Ala
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Ala Glu Gly Leu Asp Thr Gln Arg Phe Ser Gly Lys Arg Leu Gly Asp
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Thr Phe Val Leu Thr Leu Ser Asp Phe Arg Arg Glu Asn Glu Gly Tyr
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Tyr Phe Cys Ser Ala Leu Ser Asn Ser Ile Met Tyr Phe Ser His Phe
115 120 125

Val Pro Val Phe Leu Pro Ala Lys Pro Thr Thr Thr Pro Ala Pro Arg
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Pro Pro Thr Pro Ala Pro Thr Ile Ala Ser Gln Pro Leu Ser Leu Arg
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Pro Glu Ala Cys Arg Pro Ala Ala Gly Gly Ala Val His Thr Arg Gly
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Leu Asp Phe Ala Cys Asp Ile Tyr Ile Trp Ala Pro Leu Ala Gly Thr
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Cys Gly Val Leu Leu Leu Ser Leu Val Ile Thr Leu Tyr Cys Asn His
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His Ala Ala Arg Pro Ser Gln Phe Arg Val Ser Pro Leu Asp Arg Thr
          20          25          30

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Trp Asn Leu Gly Glu Thr Val Glu Leu Lys Cys Gln Val Leu Leu Ser
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Asn Pro Thr Ser Gly Cys Ser Trp Leu Phe Gln Pro Arg Gly Ala Ala
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Ala Ser Pro Thr Phe Leu Leu Tyr Leu Ser Gln Asn Lys Pro Lys Ala
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Ala Glu Gly Leu Asp Thr Gln Arg Phe Ser Gly Lys Arg Leu Gly Asp
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Thr Phe Val Leu Thr Leu Ser Asp Phe Arg Arg Glu Asn Glu Gly Tyr
100 105 110

Tyr Phe Cys Ser Ala Leu Ser Asn Ser Ile Met Tyr Phe Ser His Phe
115 120 125

Val Pro Val Phe Leu Pro Ala Lys Pro Thr Thr Thr Pro Ala Pro Arg
130 135 140

Pro Pro Thr Pro Ala Pro Thr Ile Ala Ser Gln Pro Leu Ser Leu Arg
145 150 155 160

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Leu Ser Ala Arg Tyr Val
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<213> Pongo pygmaeus

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			20					25					30		

Trp	Asn	Leu	Gly	Glu	Thr	Val	Glu	Leu	Lys	Cys	Gln	Val	Leu	Leu	Ser
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Asn Pro Thr Ser Gly Cys Ser Trp Leu Phe Gln Pro Arg Gly Ala Ala
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Ala Ser Pro Thr Phe Leu Leu Tyr Leu Ser Gln Asn Lys Pro Lys Ala
65 70 75 80

Ala Glu Gly Leu Asp Thr Gln Arg Phe Ser Gly Lys Arg Leu Gly Asp
85 90 95

Thr Phe Val Leu Thr Leu Ser Asp Phe Arg Arg Glu Asn Glu Gly Tyr
100 105 110

Tyr Phe Cys Ser Ala Leu Ser Asn Ser Ile Met Tyr Phe Ser His Phe
115 120 125

Val Pro Val Phe Leu Pro Val His Thr Arg Gly Leu Asp Phe Ala Cys
130 135 140

Asp Ile Tyr Ile Trp Ala Pro Leu Ala Gly Thr Cys Gly Val Leu Leu
145 150 155 160

Leu Ser Leu Val Ile Thr Leu Tyr Cys Asn His Arg Asn Arg Arg Arg
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Leu Ser Glu Arg Tyr Val
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<213> Mus musculus

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Glu Leu Arg Ile Phe Pro Lys Lys Met Asp Ala Glu Leu Gly Gln Lys
35 40 45

Val Asp Leu Val Cys Glu Val Leu Gly Ser Val Ser Gln Gly Cys Ser
50 55 60

Trp Leu Phe Gln Asn Ser Ser Ser Lys Leu Pro Gln Pro Thr Phe Val
65 70 75 80

Val Tyr Met Ala Ser Ser His Asn Lys Ile Thr Trp Asp Glu Lys Leu
85 90 95

Asn Ser Ser Lys Leu Phe Ser Ala Met Arg Asp Thr Asn Asn Lys Tyr
100 105 110

Val Leu Thr Leu Asn Lys Phe Ser Lys Glu Asn Glu Gly Tyr Tyr Phe
115 120 125

Cys Ser Val Ile Ser Asn Ser Val Met Tyr Phe Ser Ser Val Val Pro
130 135 140

Val Leu Gln Lys Val Asn Ser Thr Thr Thr Lys Pro Val Leu Arg Thr
145 150 155 160

Pro Ser Pro Val His Pro Thr Gly Thr Ser Gln Pro Gln Arg Pro Glu
165 170 175

Asp Cys Arg Pro Arg Gly Ser Val Lys Gly Thr Gly Leu Asp Phe Ala
180 185 190

Cys Asp Ile Tyr Ile Trp Ala Pro Leu Ala Gly Ile Cys Val Ala Leu
195 200 205

Leu Leu Ser Leu Ile Ile Thr Leu Ile Cys Tyr His Arg Ser Arg Lys
210 215 220

Arg Val Cys Lys Cys Pro Ser Ile Ala Cys Leu Cys Leu Lys Leu Gln
 225 230 235 240

Gly Ser Lys Trp Tyr Glu Ser Val Ile Cys Ser Ala Leu Ala Val Ser
 245 250 255

Ile Arg Cys Asn Lys Ser Lys Ser Gly Glu Leu Pro Leu Ala Val His
 260 265 270

Leu Asp Ile Arg Ala Pro Cys Lys Asn Trp Glu Ile Ala Gly Ser Leu
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Ala Val Val Glu Ser Asn
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Lys Ile Thr Trp Asp Glu Lys Leu Asn Ser Ser Lys Leu Phe Ser Ala
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Met Arg Asp Thr Asn Asn Lys Tyr Val Leu Thr Leu Asn Lys Phe Ser
65 70 75 80

Lys Glu Asn Glu Gly Tyr Tyr Phe Cys Ser Val Ile Ser Asn Ser Val
85 90 95

Met Tyr Phe Ser Ser Val Val Pro Val Leu Gln Lys Val Asn Ser Thr
100 105 110

Thr Thr Lys Pro Val Leu Arg Thr Pro Ser Pro Val His Pro Thr Gly
115 120 125

Thr Ser Gln Pro Gln Arg Pro Glu Asp Cys Arg Pro Arg Gly Ser Val
130 135 140

Lys Gly Thr Gly Leu Asp Phe Ala Cys Asp Ile Tyr Ile Trp Ala Pro
145 150 155 160

Leu Ala Gly Ile Cys Val Ala Leu Leu Leu Ser Leu Ile Ile Thr Leu
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Ile Cys Tyr His Arg Ser Arg Lys Arg Val Cys Lys Cys Pro Arg Pro
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50 55 60

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Val Tyr Met Ala Ser Ser His Asn Lys Ile Thr Trp Asp Glu Lys Leu
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Asn Ser Ser Lys Leu Phe Ser Ala Val Arg Asp Thr Asn Asn Lys Tyr
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115 120 125

Cys Ser Val Ile Ser Asn Ser Val Met Tyr Phe Ser Ser Val Val Pro
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Pro Ser Pro Val His Pro Thr Gly Thr Ser Gln Pro Gln Arg Pro Glu
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Cys Asp Ile Tyr Ile Trp Ala Pro Leu Ala Gly Ile Cys Val Ala Pro
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Leu Leu Ser Leu Ile Ile Thr Leu Ile Cys Tyr His Arg Ser Arg Lys
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Lys Lys Val Asp Ala Glu Ile Gly Gln Glu Val Lys Leu Thr Cys Glu
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Val Leu Arg Asp Thr Ser Gln Gly Cys Ser Trp Leu Phe Arg Asn Ser
 50 55 60

Ser Ser Glu Leu Leu Gln Pro Thr Phe Ile Ile Tyr Val Ser Ser Ser
 65 70 75 80

Arg Ser Lys Leu Asn Asp Ile Leu Asp Pro Asn Leu Phe Ser Ala Arg
 85 90 95

Lys Glu Asn Asn Lys Tyr Ile Leu Thr Leu Ser Lys Phe Ser Thr Lys
 100 105 110

Asn Gln Gly Tyr Tyr Phe Cys Ser Ile Thr Ser Asn Ser Val Met Tyr
 115 120 125

Phe Ser Pro Leu Val Pro Val Phe Gln Lys Val Asn Ser Ile Ile Thr

130

135

140

Lys Pro Val Thr Arg Ala Pro Thr Pro Val Pro Pro Pro Thr Gly Thr
145 150 155 160

Pro Arg Pro Leu Arg Pro Glu Ala Cys Arg Pro Gly Ala Ser Gly Ser
165 170 175

Val Glu Gly Met Gly Leu Gly Phe Ala Cys Asp Ile Tyr Ile Trp Ala
180 185 190

Pro Leu Ala Gly Ile Cys Ala Val Leu Leu Leu Ser Leu Val Ile Thr
195 200 205

Leu Ile Cys Cys His Arg Asn Arg Arg Arg Val Cys Lys Cys Pro Arg
210 215 220

Pro Leu Val Lys Pro Arg Pro Ser Glu Lys Phe Val
225 230 235

<210> 14
<211> 1010
<212> DNA
<213> Rattus norvegicus

<400> 14
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1010

<210> 15
<211> 237
<212> PRT
<213> Cavia porcellus

<400> 15

Met Ala Pro Arg Gly Ser Ala Trp Leu Leu Leu Leu Pro Val Ala Leu
1 5 10 15

Leu Leu Asp Ala Ala Thr Ala Gln Gly Ala Ser Gln Phe Arg Met Ser
20 25 30

Pro Arg Glu Leu Val Ala Gln Val Gly Thr Lys Val Thr Leu Arg Cys
35 40 45

Glu Val Leu Val Pro Asn Ala Pro Ala Gly Cys Ser Trp Leu Phe Gln
50 55 60

Pro Arg His Asp Ala Lys Gly Pro Thr Phe Leu Leu Tyr His Ser Ala
65 70 75 80

Ser Gly Thr Lys Leu Ala Pro Gly Leu Glu Gln Lys Arg Phe Ser Pro
85 90 95

Ser Lys Ser Ser Asn Thr Tyr Thr Leu Thr Val Asn Ser Phe Gln Lys
100 105 110

Arg Asp Glu Gly Tyr Tyr Phe Cys Ser Val Ser Gly Asn Met Met Leu
115 120 125

Tyr Phe Ser Pro Phe Val Pro Val Phe Leu Pro Ala Pro Arg Thr Thr
130 135 140

Thr Pro Pro Pro Pro Pro Thr Thr Pro Thr Pro Ser Val Gln Pro Thr
145 150 155 160

Ser Val Arg Pro Glu Thr Cys Val Val Ser Lys Gly Ala Ala Gly Ala
165 170 175

Arg Trp Leu Asp Leu Ser Cys Asp Val Tyr Ile Trp Ala Pro Leu Ala
180 185 190

Ser Thr Cys Ala Ala Leu Leu Leu Ala Leu Val Ile Thr Ile Ile Cys
195 200 205

His Arg Arg Asn Arg Gln Arg Val Cys Lys Cys Pro Arg Pro Gln Ala
210 215 220

Arg Ser Gly Gly Lys Pro Ser Pro Ser Gly Lys Leu Val
 225 230 235

<210> 16
 <211> 1330
 <212> DNA
 <213> *Cavia porcellus*

<400> 16
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 aaaaaaaaaa 1330

<210> 17
 <211> 242
 <212> PRT
 <213> *Bos taurus*

<400> 17

Met Ala Ser Leu Leu Thr Ala Leu Ile Leu Pro Leu Ala Leu Leu Leu
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Leu Asp Ala Ala Lys Val Leu Gly Ser Leu Ser Phe Arg Met Ser Pro
20 25 30

Thr Gln Lys Glu Thr Arg Leu Gly Glu Lys Val Glu Leu Gln Cys Glu
35 40 45

Leu Leu Gln Ser Gly Met Ala Thr Gly Cys Ser Trp Leu Arg His Ile
50 55 60

Pro Gly Asp Asp Pro Arg Pro Thr Phe Leu Met Tyr Leu Ser Ala Gln
65 70 75 80

Arg Val Lys Leu Ala Glu Gly Leu Asp Pro Arg His Ile Ser Gly Ala
85 90 95

Lys Val Ser Gly Thr Lys Phe Gln Leu Thr Leu Ser Ser Phe Leu Gln
100 105 110

Glu Asp Gln Gly Tyr Tyr Phe Cys Ser Val Val Ser Asn Ser Ile Leu
115 120 125

Tyr Phe Ser Asn Phe Val Pro Val Phe Leu Pro Ala Lys Pro Ala Thr
130 135 140

Thr Pro Ala Met Arg Pro Ser Ser Ala Ala Pro Thr Ser Ala Pro Gln
145 150 155 160

Thr Arg Ser Val Ser Pro Arg Ser Glu Val Cys Arg Thr Ser Ala Gly
165 170 175

Ser Ala Val Asp Thr Ser Arg Leu Asp Phe Ala Cys Asn Ile Tyr Ile
180 185 190

Trp Ala Pro Leu Val Gly Thr Cys Gly Val Leu Leu Leu Ser Leu Val
195 200 205

Ile Thr Gly Ile Cys Tyr Arg Arg Asn Arg Arg Arg Val Cys Lys Cys
210 215 220

Pro Arg Pro Val Val Arg Gln Gly Gly Lys Pro Asn Leu Ser Glu Lys
225 230 235 240

Tyr Val

<210> 18

<211> 2001
<212> DNA
<213> Bos taurus

<400> 18
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aacatttatg gcttacttct t 2001

<210> 19
<211> 236
<212> PRT
<213> Sus scrofa

<400> 19

Met Ala Ser Leu Val Thr Ala Leu Leu Leu Pro Leu Val Leu Gln Leu
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His Pro Ala Lys Val Leu Gly Ser Ser Leu Phe Arg Thr Ser Pro Glu
20 25 30

Met Val Gln Ala Ser Leu Gly Glu Thr Val Lys Leu Arg Cys Glu Val
35 40 45

Met His Ser Asn Thr Leu Thr Ser Cys Ser Trp Leu Tyr Gln Lys Pro
50 55 60

Gly Ala Ala Ser Lys Pro Ile Phe Leu Met Tyr Leu Ser Lys Thr Arg
65 70 75 80

Asn Lys Thr Ala Glu Gly Leu Asp Thr Arg Tyr Ile Ser Gly Tyr Lys
85 90 95

Ala Asn Asp Asn Phe Tyr Leu Ile Leu His Arg Phe Arg Glu Glu Asp
100 105 110

Gln Gly Tyr Tyr Phe Cys Ser Phe Leu Ser Asn Ser Val Leu Tyr Phe
115 120 125

Ser Asn Phe Met Ser Val Phe Leu Pro Ala Lys Pro Thr Lys Thr Pro
130 135 140

Thr Thr Pro Pro Pro Lys Arg Thr Pro Thr Lys Ala Ser His Ala Val
145 150 155 160

Ser Val Ala Pro Glu Val Cys Arg Pro Ser Gly Asn Ala Asp Pro Arg
165 170 175

Lys Leu Asp Leu Ala Cys Asp Leu Tyr Asn Trp Ala Pro Leu Val Gly
180 185 190

Thr Ser Gly Ile Leu Leu Leu Ser Leu Val Ile Thr Ile Ile Cys His

195

200

205

Arg Arg Asn Arg Arg Arg Val Cys Lys Cys Pro Arg Pro Val Val Arg
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Gln Gly Gly Lys Ala Ser Pro Ser Glu Arg Phe Ile
 225 230 235

<210> 20
 <211> 2179
 <212> DNA
 <213> Sus scrofa

<400> 20
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<210> 21
 <211> 239
 <212> PRT
 <213> Felis catus

<400> 21

Met	Ala	Ser	Pro	Val	Thr	Ala	Gln	Leu	Leu	Pro	Leu	Ala	Leu	Leu	Leu
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His	Ala	Ala	Ala	Ala	Ala	Gly	Pro	Ser	Pro	Phe	Arg	Leu	Ser	Pro	Val
			20					25					30		

Arg	Val	Glu	Gly	Arg	Leu	Gly	Gln	Arg	Val	Glu	Leu	Gln	Cys	Glu	Val
		35				40						45			

Leu	Leu	Ser	Ser	Ala	Ala	Pro	Gly	Cys	Thr	Trp	Leu	Phe	Gln	Lys	Asn
	50					55					60				

Glu	Pro	Ala	Ala	Arg	Pro	Ile	Phe	Leu	Ala	Tyr	Leu	Ser	Arg	Ser	Arg
65					70					75					80

Thr	Lys	Leu	Ala	Glu	Glu	Leu	Asp	Pro	Lys	Gln	Ile	Ser	Gly	Gln	Arg
				85					90					95	

Ile	Gln	Asp	Thr	Leu	Tyr	Ser	Leu	Thr	Leu	His	Arg	Phe	Arg	Lys	Glu
			100					105					110		

Glu	Glu	Gly	Tyr	Tyr	Phe	Cys	Ser	Val	Val	Ser	Asn	Ser	Val	Leu	Tyr
		115					120					125			

Phe Ser Ala Phe Val Pro Val Phe Leu Pro Val Lys Pro Thr Thr Thr
130 135 140

Pro Ala Pro Arg Pro Pro Thr Gln Ala Pro Ile Thr Thr Ser Gln Arg
145 150 155 160

Val Ser Leu Arg Pro Gly Thr Cys Gln Pro Ser Ala Gly Ser Thr Val
165 170 175

Glu Ala Ser Gly Leu Asp Leu Ser Cys Asp Ile Tyr Ile Trp Ala Pro
180 185 190

Leu Ala Gly Thr Cys Ala Phe Leu Leu Leu Ser Leu Val Ile Thr Val
195 200 205

Ile Cys Asn His Arg Asn Arg Arg Arg Val Cys Lys Cys Pro Arg Pro
210 215 220

Val Val Arg Ala Gly Gly Lys Pro Ser Pro Ser Glu Arg Tyr Val
225 230 235

<210> 22
<211> 785
<212> DNA
<213> Felis catus

<400> 22
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acagt 785

<210> 23

<211> 235
<212> PRT
<213> Sigmodon hispidus

<400> 23

Met Ala Pro Arg Val Thr Arg Phe Leu Cys Leu Thr Leu Leu Leu Glu
1 5 10 15

Phe Ile Ala Glu Leu Gly Gly Ser Lys Asp Phe Glu Met Ser Pro Lys
20 25 30

Lys Val Val Ala His Leu Gly Lys Glu Val Arg Leu Thr Cys Glu Val
35 40 45

Trp Val Ser Thr Ser Gln Gly Cys Ser Trp Leu Phe Leu Glu His Gly
50 55 60

Ser Gly Val Lys Pro Thr Phe Leu Ile Tyr Leu Ser Gly Ser Arg Asn
65 70 75 80

Glu Arg Asn Asn Lys Ile Pro Ser Thr Lys Leu Ser Gly Lys Lys Glu
85 90 95

Asp Lys Lys Tyr Thr Leu Thr Leu Asn Asn Phe Ala Lys Glu Asp Glu
100 105 110

Gly Tyr Tyr Phe Cys Ser Val Thr Ser Asn Ser Val Val Tyr Phe Ser
115 120 125

Pro Leu Val Ser Val Phe Leu Pro Glu Lys Pro Thr Thr Pro Val Pro
130 135 140

Lys Pro Pro Thr Ser Val Pro Thr Thr Ala Ile Ser Arg Ser Leu Arg
145 150 155 160

Pro Glu Ala Cys Arg Pro Gly Ala Gly Thr Ser Val Glu Lys Lys Gly
165 170 175

Trp Asp Phe Asp Cys Asp Ile Ile Ile Leu Ala Pro Leu Ala Gly Leu
180 185 190

Cys Gly Val Leu Leu Leu Ser Leu Val Thr Thr Leu Ile Cys Cys His
195 200 205

Arg Asn Arg Lys Arg Val Cys Lys Cys Pro Arg Pro Val Val Arg Gln
210 215 220

Gly Gly Lys Pro Ser Pro Ser Gly Lys Leu Val
225 230 235

<210> 24
 <211> 1229
 <212> DNA
 <213> Sigmodon hispidus

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<210> 25
 <211> 235
 <212> PRT
 <213> Saimiri sciureus

<400> 25

Met Ala Ser Pro Val Thr Ala Leu Leu Leu Pro Leu Ala Leu Leu Leu
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His Ala Ala Arg Pro Ser Arg Phe Arg Val Ser Pro Leu Asp Arg Thr
 20 25 30

Trp Asn Leu Gly Asp Lys Val Glu Leu Lys Cys Glu Val Leu Leu Ser
 35 40 45

Asn Pro Ser Ser Gly Cys Ser Trp Leu Phe Gln Lys Arg Gly Ala Ala
 50 55 60

Ala Ser Pro Thr Phe Leu Leu Tyr Ile Ser Gln Thr Lys Pro Lys Val
 65 70 75 80

Ala Asp Gly Leu Asp Ala Gln Arg Phe Ser Gly Lys Lys Met Gly Asp
 85 90 95

Ser Phe Ile Leu Thr Leu Arg Asp Phe Arg Glu Glu Asp Gln Gly Phe
 100 105 110

Tyr Phe Cys Ser Ala Leu Ser Asn Ser Ile Met Tyr Phe Ser Pro Phe
 115 120 125

Val Pro Val Phe Leu Pro Ala Lys Pro Thr Thr Thr Pro Ala Pro Arg
 130 135 140

Pro Pro Thr Pro Glu Pro Thr Thr Ala Ser Gln Pro Leu Ser Leu Arg
 145 150 155 160

Pro Gln Ala Cys Arg Pro Pro Ala Gly Gly Ala Val Asp Thr Arg Gly
 165 170 175

Leu Asp Phe Ala Cys Asp Ile Tyr Ile Trp Val Pro Leu Ala Gly Thr
 180 185 190

Cys Gly Val Leu Leu Leu Ser Leu Val Ile Thr Val Tyr Cys Asn His
 195 200 205

Arg Asn Arg Arg Arg Val Cys Lys Cys Pro Arg Pro Ala Val Lys Ser
 210 215 220

Gly Gly Lys Pro Ser Pro Ser Glu Arg Tyr Val
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<210> 26
 <211> 708
 <212> DNA
 <213> Saimiri sciureus

<400> 26
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 gtcacaccg tttattgcaa tcacaggaac cgacgacgtg tttgcaaata tccccggcct 660
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<210> 27
 <211> 235
 <212> PRT
 <213> Homo sapiens

<400> 27

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His Ala Ala Arg Pro Ser Gly Phe Arg Val Ser Pro Leu Asp Arg Thr
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Trp Asn Leu Gly Glu Thr Val Glu Leu Lys Cys Gly Val Leu Leu Ser
 35 40 45

Asn Pro Thr Ser Gly Cys Ser Trp Leu Phe Gly Pro Arg Gly Ala Ala
 50 55 60

Ala Ser Pro Thr Phe Leu Leu Tyr Leu Ser Gly Asn Lys Pro Lys Ala
 65 70 75 80

Ala Glu Gly Leu Asp Thr Gly Arg Phe Ser Gly Lys Arg Leu Gly Asp
 85 90 95

Thr Phe Val Leu Thr Leu Ser Asp Phe Arg Arg Glu Asn Glu Gly Tyr
 100 105 110

Tyr Phe Cys Ser Ala Leu Ser Asn Ser Ile Met Tyr Phe Ser His Phe
 115 120 125

Val Pro Val Phe Leu Pro Ala Lys Pro Thr Thr Thr Pro Ala Pro Arg
 130 135 140

Pro Pro Thr Pro Ala Pro Thr Ile Ala Ser Gly Pro Leu Ser Leu Arg
 145 150 155 160

Pro Glu Ala Cys Arg Pro Ala Ala Gly Gly Ala Val His Thr Arg Gly
165 170 175

Leu Asp Phe Ala Cys Asp Ile Tyr Ile Trp Ala Pro Leu Ala Gly Thr
180 185 190

Cys Gly Val Leu Leu Leu Ser Leu Val Ile Thr Leu Tyr Cys Asn His
195 200 205

Arg Asn Arg Arg Arg Val Cys Lys Cys Pro Arg Pro Val Val Lys Ser
210 215 220

Gly Asp Lys Pro Ser Leu Ser Ala Arg Tyr Val
225 230 235

<210> 28
<211> 708
<212> DNA
<213> Homo sapiens

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gttatcacc tttactgcaa ccacaggaac cgaagacgtg tttgcaaatg tccccggcct 660
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<210> 29
<211> 310
<212> PRT
<213> Mus musculus

<400> 29

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Glu Leu Arg Ile Phe Pro Lys Lys Met Asp Ala Glu Leu Gly Gly Lys
35 40 45

Val Asp Leu Val Cys Glu Val Leu Gly Ser Val Ser Gly Gly Cys Ser
50 55 60

Trp Leu Phe Gly Asn Ser Ser Ser Lys Leu Pro Gly Pro Thr Phe Val
65 70 75 80

Val Tyr Met Ala Ser Ser His Asn Lys Ile Thr Trp Asp Glu Lys Leu
85 90 95

Asn Ser Ser Lys Leu Phe Ser Ala Met Arg Asp Thr Asn Asn Lys Tyr
100 105 110

Val Leu Thr Leu Asn Lys Phe Ser Lys Glu Asn Glu Gly Tyr Tyr Phe
115 120 125

Cys Ser Val Ile Ser Asn Ser Val Met Tyr Phe Ser Ser Val Val Pro
130 135 140

Val Leu Gly Lys Val Asn Ser Thr Thr Thr Lys Pro Val Leu Arg Thr
145 150 155 160

Pro Ser Pro Val His Pro Thr Gly Thr Ser Gly Pro Gly Arg Pro Glu
165 170 175

Asp Cys Arg Pro Arg Gly Ser Val Lys Gly Thr Gly Leu Asp Phe Ala
180 185 190

Cys Asp Ile Tyr Ile Trp Ala Pro Leu Ala Gly Ile Cys Val Ala Leu
195 200 205

Leu Leu Ser Leu Ile Ile Thr Leu Ile Cys Tyr His Arg Ser Arg Lys
210 215 220

Arg Val Cys Lys Cys Pro Ser Ile Ala Cys Leu Cys Leu Lys Leu Gly
225 230 235 240

Gly Ser Lys Trp Tyr Glu Ser Val Ile Cys Ser Ala Leu Ala Val Ser
245 250 255

Ile Arg Cys Asn Lys Ser Lys Ser Gly Glu Leu Pro Leu Ala Val His
260 265 270

Leu Asp Ile Arg Ala Pro Cys Lys Asn Trp Glu Ile Ala Gly Ser Leu
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Val Glu Arg Tyr Gly Lys Ser Gly Lys His Ser Pro Leu Ser Leu Lys
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Ala Val Val Glu Ser Asn
 305 310

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 <211> 933
 <212> DNA
 <213> Mus musculus

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<210> 31
 <211> 626
 <212> DNA
 <213> Homo sapiens

<400> 31
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acaagtatca	ctaagctcgc	tttcttgctg	tccaatttct	attaaagggtt	cctttgttcc	540
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 <212> DNA
 <213> Homo sapiens

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<210> 33
 <211> 1937
 <212> DNA
 <213> Homo sapiens

<400> 33						
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 <211> 2650
 <212> DNA
 <213> Homo sapiens

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 <211> 1927
 <212> DNA
 <213> Homo sapiens

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ac	gg	acac	gg	ccc	gt	gtatt	gt	ctag	catg	gcag	at	gcag	1020	
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2197

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 <212> DNA
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 <211> 247
 <212> PRT
 <213> Mus musculus

<400> 50

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Glu Leu Arg	Ile Phe Pro Lys	Lys Met Asp Ala Glu	Leu Gly Gln Lys
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Val Asp Leu	Val Cys Glu Val	Leu Gly Ser Val	Ser Gln Gly Cys Ser
	50	55	60
Trp Leu Phe	Gln Asn Ser Ser Ser	Lys Leu Pro Gln Pro	Thr Phe Val
	65	70	75
Val Tyr Met	Ala Ser Ser His Asn	Lys Ile Thr Trp Asp	Glu Lys Leu
	85	90	95
Asn Ser Ser	Lys Leu Phe Ser Ala	Val Arg Asp Thr Asn	Asn Lys Tyr
	100	105	110
Val Leu Thr	Leu Asn Lys Phe Ser	Lys Glu Asn Glu Gly	Tyr Tyr Phe
	115	120	125
Cys Ser Val	Ile Ser Asn Ser Val	Met Tyr Phe Ser	Ser Val Val Pro
	130	135	140
Val Leu Gln	Lys Val Asn Ser Thr	Thr Thr Lys Pro	Val Leu Arg Thr
	145	150	155
Pro Ser Pro	Val His Pro Thr Gly	Thr Ser Gln Pro Gln	Arg Pro Glu
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Asp Cys Arg	Pro Arg Gly Ser Val	Lys Gly Thr Gly Leu	Asp Phe Ala
	180	185	190
Cys Asp Ile	Tyr Ile Trp Ala Pro	Leu Ala Gly Ile Cys	Val Ala Pro
	195	200	205
Leu Leu Ser	Leu Ile Ile Thr	Leu Ile Cys Tyr His	Arg Ser Arg Lys
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Arg Pro Ser	Glu Lys Ile Val		
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<210> 51
 <211> 197

<212> PRT
<213> Homo sapiens

<400> 51

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35 40 45

Asn Pro Thr Ser Gly Cys Ser Trp Leu Phe Gln Pro Arg Gly Ala Ala
50 55 60

Ala Ser Pro Thr Phe Leu Leu Tyr Leu Ser Gln Asn Lys Pro Lys Ala
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Ala Glu Gly Leu Asp Thr Gln Arg Phe Ser Gly Lys Arg Leu Gly Asp
85 90 95

Thr Phe Val Leu Thr Leu Ser Asp Phe Arg Arg Glu Asn Glu Gly Tyr
100 105 110

Tyr Phe Cys Ser Ala Leu Ser Asn Ser Ile Met Tyr Phe Ser His Phe
115 120 125

Val Pro Val Phe Leu Pro Ala Lys Pro Thr Thr Thr Pro Ala Pro Arg
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Pro Pro Thr Pro Ala Pro Thr Ile Ala Ser Gln Pro Leu Ser Leu Arg
145 150 155 160

Pro Glu Ala Cys Arg Pro Ala Ala Gly Gly Ala Gly Asn Arg Arg Arg
165 170 175

Val Cys Lys Cys Pro Arg Pro Val Val Lys Ser Gly Asp Lys Pro Ser
180 185 190

Leu Ala Arg Tyr Val
195